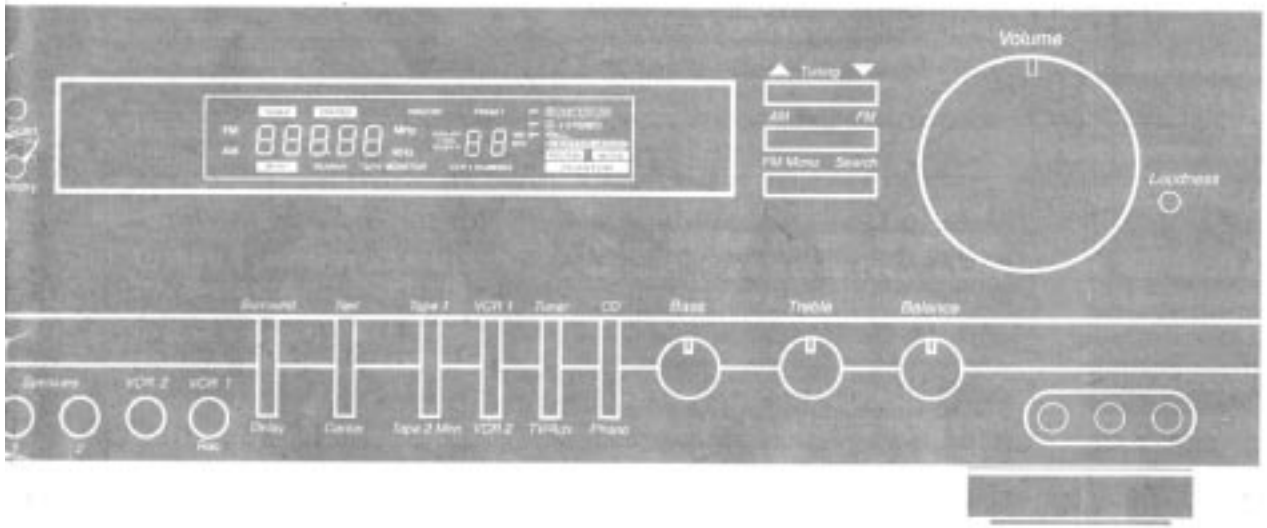
AVR20 II



harman/kardon

Audio and Video Receiver

OWNER'S MANUAL

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.
ATTENTION: POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

Harman Kardon AVR20 II

Date of purchase _____
Purchased from _____
Address of business purchased from _____
_____
Installed by _____
Date installed _____
Serial No. _____

Note to CATV System installer: This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Thank you for choosing a Harman Kardon Audio/Video Receiver.

Your new unit is an exceptionally well-engineered product that will give you years of superb performance.

Save all packing material.

It is essential for shipping should you move, or in the event the unit ever needs repair.

U. S. and Canadian customers should use 120 volt AC only. Other customers should use voltages appropriate to their area. Connecting the unit to an outlet supplying a higher voltage may create a fire hazard.

Handle the Power Cord Gently.

- To disconnect the plug from the AC outlet, pull on the plug itself, not on the cord.
- Disconnect the plug from the AC outlet whenever the unit is to be left unused for an extended period of time.
- Do not place furniture or other heavy objects on the cord, and avoid dropping heavy objects on it. Also do not make a knot in the cord.

Place the unit on a firm and level surface.

Avoid installing it:

- In moist or humid places;
- Close to heating equipment or in places exposed to direct sunlight;
- In a direct draft from an air conditioner or in other very cold locations;
- In places subject to excessive vibration or dust;
- In poorly ventilated places.

Moving the Unit.

Before moving the unit, be sure to unplug the power cord from the AC outlet and disconnect all wires to antennas and other components.

Do Not Open the Cabinet.

Do not attempt to service this unit. Tampering with internal components can cause fire or shock, and may void your guarantee. If water or small objects enter the unit, unplug the power cord immediately and consult an authorized Harman Kardon service center. Using the unit under such conditions may cause a fire or shock hazard.

Cleaning.

Remove dust by wiping the unit with a soft, dry cloth. If necessary, use a soft cloth lightly dampened with mild soapy water; then wipe with a dry cloth. Never use benzene, thinner, alcohol or other volatile agents, and avoid spraying insecticides near the unit.

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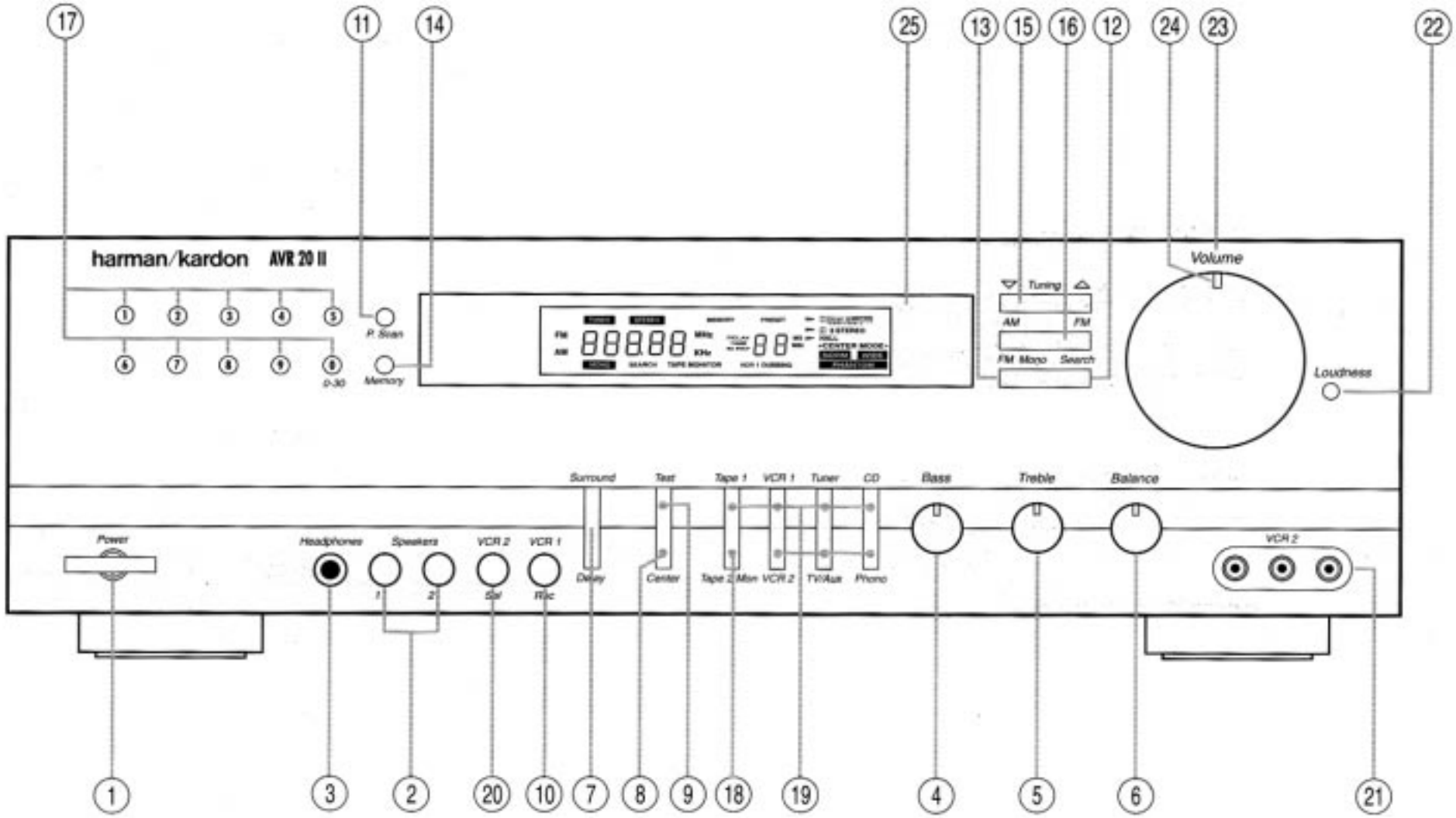
FCC Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequeny energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different fromt that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

CAUTION : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Front Panel Controls



Front Panel Controls

1. POWER BUTTON

Press this button to turn the power on. Press again to turn the power off. It can also be used as a system power button, if you connect the other components to the switched outlets.

NOTE: In POWER OFF state, the POWER indicator will light up orange and power is partially supplied to the infrared remote control receiver and the memory circuitry.

2. 1/2 SPEAKER SWITCHES

These switches allow you to select various combinations of speakers as follows;

- To drive 1 pair of speakers, push only the speaker 1 switch in.
- To drive a second pair of speakers, push only the speaker 2 switch in.
- To drive both pairs of speakers, push both 1 and 2 switches in.
- To use headphones for private listening or monitoring, leave both 1 and 2 switches pushed out.

NOTE: If both speaker switches are pushed in and only one set of speakers is connected to the receiver, no sound will be heard.

3. HEADPHONE JACK

Stereo headphones can be plugged into this jack for private listening. Headphone impedance should be between 8 and 2K ohms. Best results between 200 and 400 ohms.

4. BASS CONTROL

Modifies the low-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

5. TREBLE CONTROL

Modifies the high-frequency sound of the left and right channels as much as +/- 10dB. Set this control at a suitable position for your taste and room acoustics.

6. BALANCE CONTROL

This control is used for balancing the relative sound volume of the left and right channel speakers. Clockwise rotation reduces the volume from the left speaker, counterclockwise rotation reduces the volume from the right speaker.

7. SURROUND MODE SELECTOR

Press this switch to select the desired surround mode. The mode is changed as below, when it is pressed in succession.

→ DOLBY PRO LOGIC → DOLBY 3 STEREO → HALL → OFF

The mode indicator, ► on the display window indicates the selected mode. In the OFF mode, the indicator disappears.

-DELAY TIME (see page 16)

8. CENTER MODE SELECTOR

This button operates only in Dolby Pro Logic and Dolby 3 Stereo mode. The mode changes as below, when the button is pressed in succession.

DOLBY PRO-LOGIC MODE

→ NORM → WIDE → PHANTOM →

DOLBY 3 STEREO MODE

→ NORM → WIDE

The display window shows each mode.

NORM: Select this mode if you use a small center speaker. The bass sound of the center channel is reproduced from the front speakers, because the small speaker cannot produce enough bass.

WIDE: Select this mode if you use a medium-to-large center speaker. The bass sound is reproduced from the center speaker.

PHANTOM: Select this mode if you don't use a center speaker. The center speaker's sound is reproduced from the front speakers.

9. TEST TONE BUTTON

This button operates only in DOLBY PRO-LOGIC and DOLBY 3 STEREO mode. When the button is pressed, 2 seconds of test tone is generated in all channels (Left, Center, Right, and Surround) in succession. The display window shows TEST L, C, R and S in succession.

The letter L, C, R or S (in DOLBY PRO-LOGIC mode) or L, C or R (in DOLBY 3 STEREO mode) blinks 2 times in succession. Use this button to test speaker connections.

10. VCR 1 REC

Press the VCR 2 button and VCR1 DUBBING button. Set the recording VCR (VCR 1) to recording mode. Set the playback VCR (VCR 2) to playback mode.

Dubbing will start.

- To hear another input source during video tape dubbing: Press the input function you want to hear, and play the input source.

NOTE: If you press the TEST TONE button during VCR 1 DUBBING, the audio signal is not recorded.

11. PRESET SCAN BUTTON

Press this button to scan the preset station frequencies. The receiver stops at each preset location that contains a frequency for about 4 seconds, so you can hear a station. The preset location indicator blinks 4 times. Press this button again to stop scanning.

12. SEARCH SELECTOR

Press this button to select AUTO or MANUAL tuning.

- In AUTO mode, scanning is automatically continued up or down until the next station is picked up by pressing the UP/DOWN tuning button. The display window shows 'SEARCH'. Use this mode to quickly find strong AM or FM stations.
- In MANUAL mode, the frequency is changed by a step with the UP/DOWN button. If you keep pressing the UP/DOWN tuning button, scanning is continued until the button is released.

NOTE: Tuning Intervals:

BAND	USA/Canada
FM	50 KHz
AM	10 KHz

13. FM MODE BUTTON

Press this button to select stereo or mono mode.

- **STEREO:** Provides stereophonic reception of an FM stereo broadcast. The display window shows 'STEREO'.
- **MONO:** The left and right channel signals detected from an FM stereo broadcast are mixed and reproduced through both channels. If you want to find a weak FM station, select this mode. The display window shows 'MONO'.

14. STATION MEMORY BUTTON

Use this button to store an AM or FM frequency. Press this button and select one of 30 preset locations to store the frequency with the STATION PRESET buttons while the memory indicator, 'MEMORY' blinks. **NOTE:** When you store a frequency in a memory location that already contains a frequency, you replace the previous frequency. If your receiver is disconnected from AC power for more than about 10 days, it loses all stored frequencies.

15. UP/DOWN TUNING BUTTONS

Press the DOWN button (v) to tune in lower frequency stations, the UP button (^) to tune in higher frequency stations. If you press the DOWN button when the display is at the bottom of the frequency range, the display returns to the top of the range. If you press the UP button when the display is at the top of the frequency range, the display returns to the bottom of the range. When the receiver finds a strong frequency, the display window shows 'TUNED'.

16. FM/AM BAND SELECTOR

Press these buttons to select the FM or AM radio band. When you select the AM or FM radio band, the receiver displays the last frequency selected on that band.

17. STATION PRESET BUTTONS

Select one of 30 preset locations to recall the station stored in memory. The input function is automatically changed to TUNER when the button is pressed. When you select numbers from 10 through 29, you must select the second digit within about 2 seconds. To select preset 30, simply press "0".

18. TAPE 2 MONITOR BUTTON

Set TAPE 2 MONITOR to the "off" position when you want to hear the other input functions. Press this button to monitor the cassette deck connected to the TAPE 2 MON input jacks.

19. INPUT FUNCTION SELECTOR

Press the button to select the desired input function: VCR 1, VCR 2, TAPE 1, TV/Aux, Tuner, CD or Phono.

20. VCR 2 SELECTOR

Push in this button to select the VCR 2 jacks on the front, rather than the VCR 2 jacks on the rear.

21. VCR 2/CAMCORDER INPUT JACKS

VIDEO IN:

Connect to the VIDEO OUTPUT jack of a VCR (Yellow jack).

AUDIO IN:

Connect to the AUDIO OUTPUT jacks of a VCR (Red and White jacks).

22. LOUDNESS BUTTON

Press this button to compensate for the response of the human ear at low listening levels (known as the Fletcher-Munson hearing curve). The high and low frequencies are automatically boosted when this button is pushed in. In the OFF position, the frequency response is flat at all volume levels. This button does not work at high volume levels.

23. VOLUME CONTROL

Turn the VOLUME clockwise to increase the volume and counterclockwise to decrease it. The volume of the front, center, and rear channels is changed at the same time.

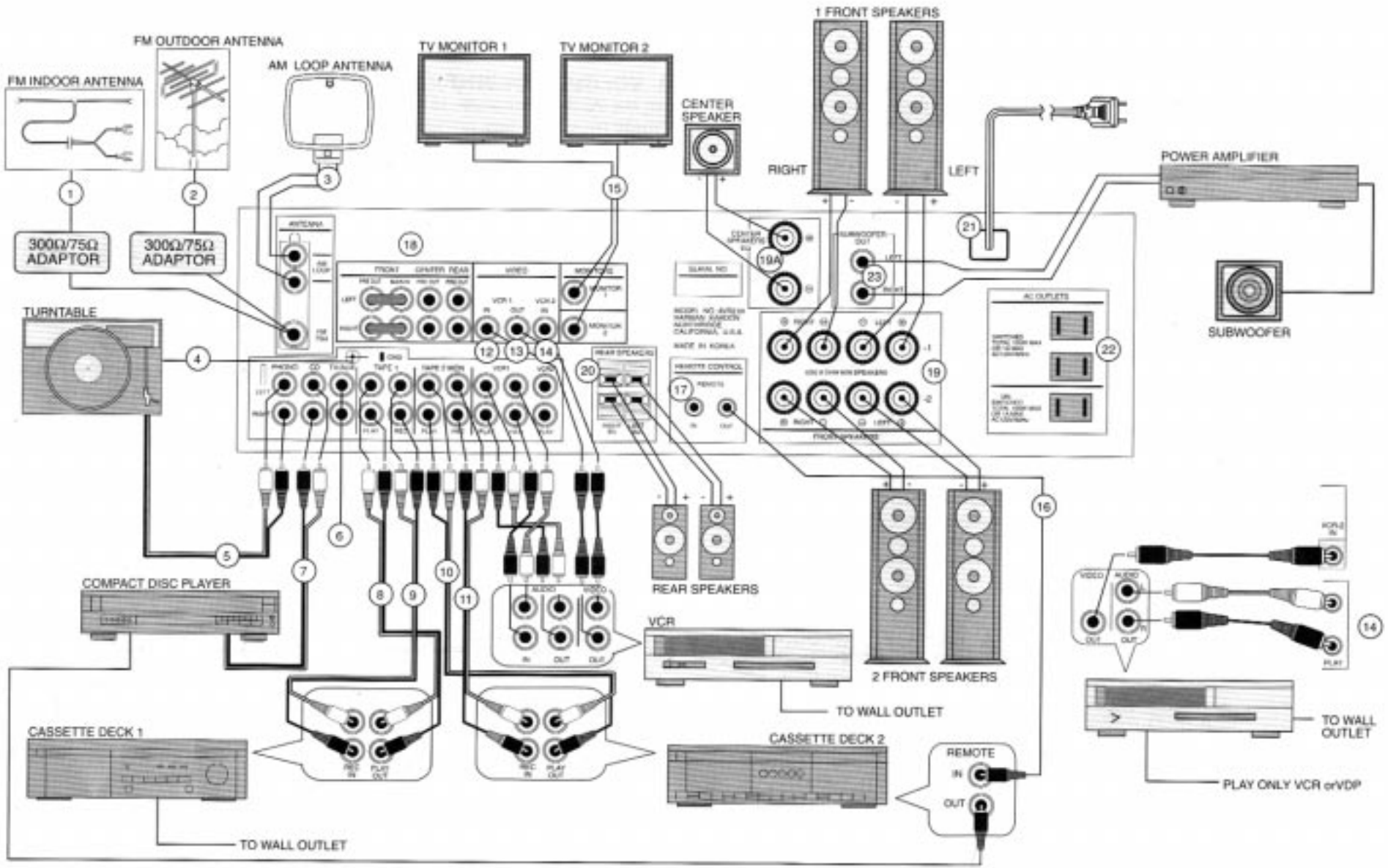
24. VOLUME LEVEL INDICATOR

This indicator moves in accordance with the volume level. The indicator blinks when the mute button on the remote commander is pressed.

25. DISPLAY WINDOW

This window shows the state of operation for easier control of the receiver. It also contains the IR Remote Sensor.

Rear Panel Connections



Rear Panel Connections

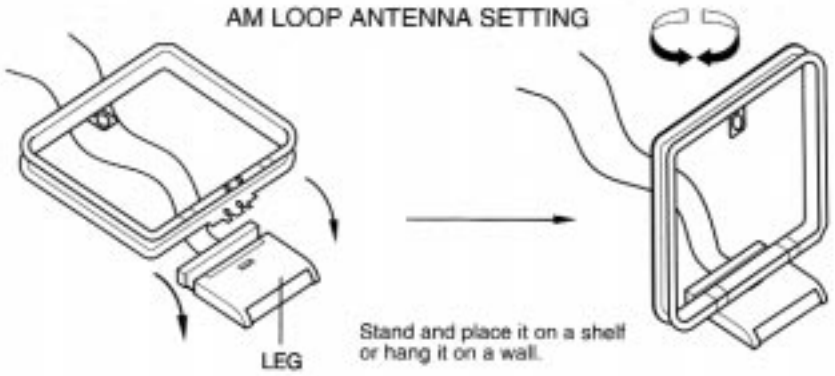
1. FM INDOOR ANTENNA
Connect the supplied antenna (the wire lead) to a 300Ω/75Ω adapter and connect the adapter to the 75Ω T-shaped FM antenna terminal, as shown in the Rear Panel Connection Diagram. Change the position of the antenna until you get the best reception of your favorite stations.

2. FM OUTDOOR ANTENNA
An outdoor FM antenna may be used to further improve the quality of reception. Disconnect the indoor antenna before replacing it with the outdoor one. A 75Ω/300Ω adapter must be used.

3. AM LOOP ANTENNA
Tune in your favorite AM station and position the loop antenna for best reception. Try other stations and find the position that gives the best overall reception. When this unit is mounted in a rack or placed on a shelf with insufficient space behind, hang the antenna on a wall in the direction which gives the best reception.

NOTE: If noise is heard during AM reception, move the antenna for better reception. To prevent undesired noise, the AM LOOP ANTENNA should be located at least 12 inches (30cm) away from the remote control wiring.

AM LOOP ANTENNA SETTING



4. SYSTEM GROUND TERMINAL
To reduce hum to a minimum, connect the ground lead from your turntable to this terminal.

5. PHONO INPUT JACKS
Input for TURNTABLE with an MM cartridge having 47K ohms of load impedance. Connect shielded cables from your phono to the LEFT and RIGHT input jacks.

NOTE: Do not place your TURNTABLE on a speaker enclosure. This will avoid howling caused by transmission of the speaker vibration to the TURNTABLE.

6. TV/AUX INPUT JACKS
This extra stereo input is provided for any source you want to hear. An additional compact disc player, a tape recorder, a video cassette recorder (VCR) etc. can be plugged into these jacks.

7. CD INPUT JACKS
Connect the output cables of a compact disc player to these jacks.

8. TAPE 1 PLAY JACKS
Connect the line output of your CASSETTE DECK to these jacks.

9. TAPE 1 REC JACKS
Connect the line input of your CASSETTE DECK to these jacks.

10. TAPE 2 MONITOR PLAY JACKS
Connect the line output of your cassette deck to these jacks. This input may be connected to the line output of the audio processor like an optional graphic equalizer or a Digital Signal Processor.

11. TAPE 2 MONITOR REC JACKS
Connect the line input of your cassette deck to these jacks. EQ controls, loudness and volume settings have no effect on the signal from this output for recording. To monitor this input source while recording, press the TAPE 2 MONITOR button (MONITOR ON position). These REC jacks may be used for the line input of the audio processor like an optional graphic equalizer or a Digital Signal Processor.

12. VIDEO/AUDIO INPUT (PLAY) JACKS OF VCR 1
Connect these jacks to the corresponding OUTPUT jacks of your TV (if available) or VCR.

13. VIDEO/AUDIO OUTPUT (REC) JACKS OF VCR1

Connect these jacks to the corresponding INPUT jacks of a VCR. VIDEO OUTPUT jack: Connect this jack to the VIDEO INPUT jack of the VCR. VIDEO REC jack: Connect these jacks to the AUDIO INPUT jacks of the VCR.

14. VIDEO/AUDIO INPUT (PLAY) JACKS OF VCR 2

Connect these jacks to the corresponding OUTPUT jacks of your VCR or VDP.

15. VIDEO MONITOR JACK

Connect this jack to the VIDEO INPUT jack of a TV/MONITOR.

16. REMOTE CONTROL OUT JACK

Connect this jack to the "REMOTE IN" jack on a Harman Kardon component. Use one of the accessory mini-plug cables

You can control many other Harman Kardon components in your system using the AVR20 II remote commander.

17. MULTI-ROOM REMOTE IN JACK

Connect a Harman Kardon HE 1000 remote I.R. sensor to this jack. You can operate the unit by remote commander through the adapter. It is convenient when the unit is located in a separate room. (See page 10)

18. FRONT, CENTER, REAR PRE OUT AND MAIN IN JACKS

FRONT PRE OUT

When a separate power amplifier is used to drive the front speakers, connect the power amplifier input to these jacks.

FRONT MAIN IN

When a separate pre-amplifier is connected and this unit is used as a power amplifier, connect the pre-amplifier output to these jacks.

NOTE: When you do not use the PRE OUT and MAIN IN separately, always connect the PRE OUT and MAIN IN jacks with a jumper plug.

CENTER PRE OUT

When a separate power amplifier is used to drive the center speaker, connect the power amplifier input to these jacks.

REAR PRE OUT

When a separate power amplifier is used to drive the rear speaker, connect the power amplifier input to these jacks.

19. 1/2 SPEAKER TERMINALS

Connect the main left (L) and right (R) speakers to the corresponding A and B speaker terminals. Make sure that the positive (+) and negative (-) terminals on the speaker are connected to the corresponding terminals on the receiver.

19A. CENTER SPEAKER TERMINALS

Connect the corresponding positive and negative terminals on the center speaker to the positive (+) and negative (-) terminals on the receiver.

20. REAR SPEAKER TERMINALS

Connect rear speakers to the corresponding terminals. When you connect the rear speakers, connect both L and R speakers.

21. AC INPUT CORD

Plug this cord in AC outlet on a wall.

22. AC Convenience Receptacles

Other stereo components may be plugged into the back of your receiver.

1. If a component is plugged into the SWITCHED receptacle, power will be supplied to that component only when your receiver is turned on.

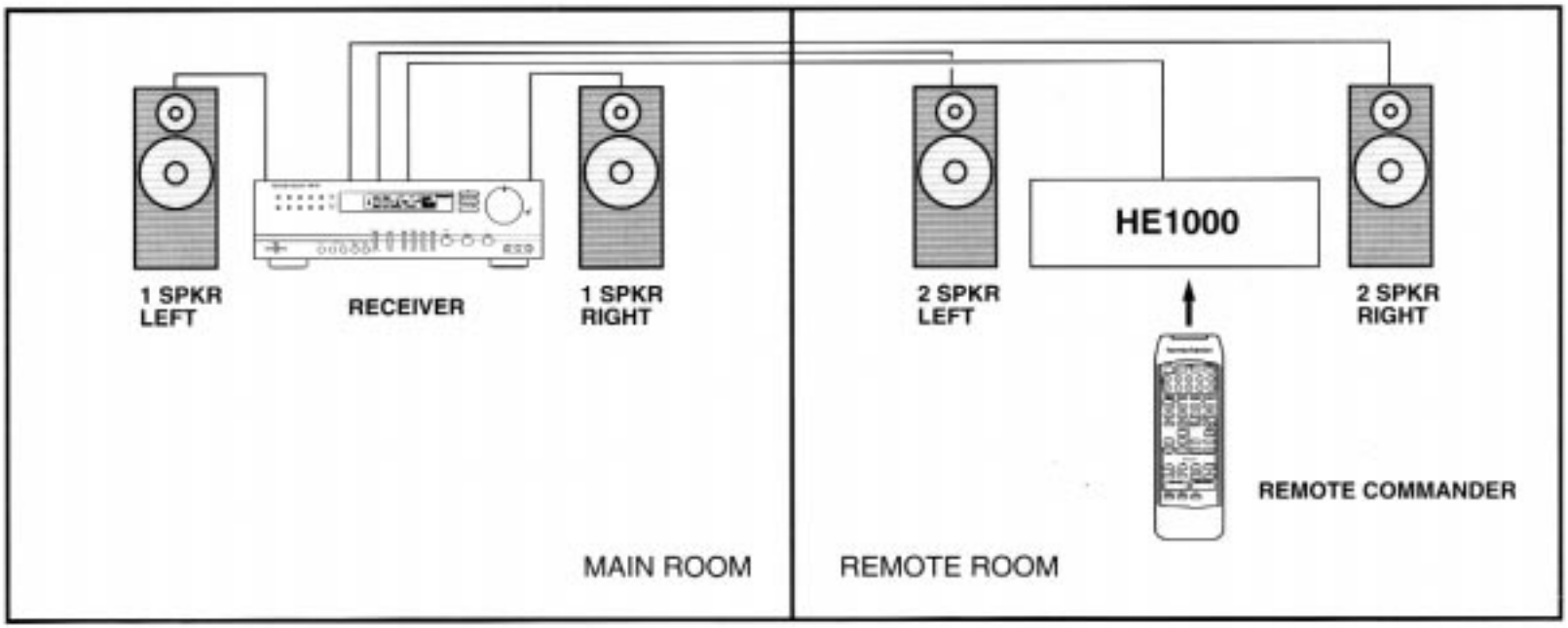
2. If a component is plugged into the UNSWITCHED receptacle, power will be supplied whether your receiver is on or off.

NOTE: Do not connect any component that requires more than 100 Watts of power. Check the owner's manual or the back of the component to find it's power requirement.

23. SUBWOOFER OUT

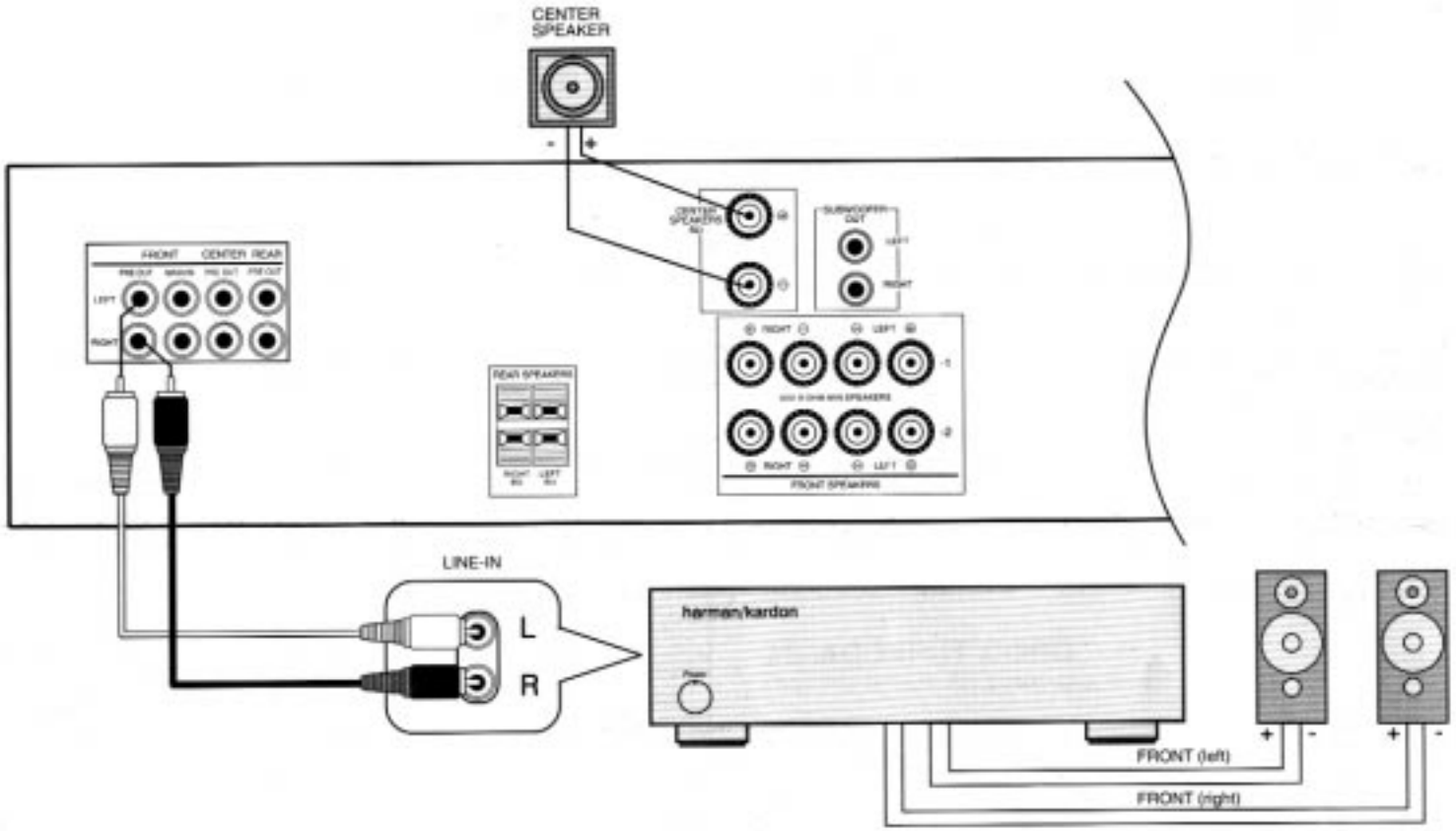
When a separate power amplifier is used to drive a subwoofer connect the power amplifier inputs to these jacks.

Optional Multi-Room Control Adapter Connection

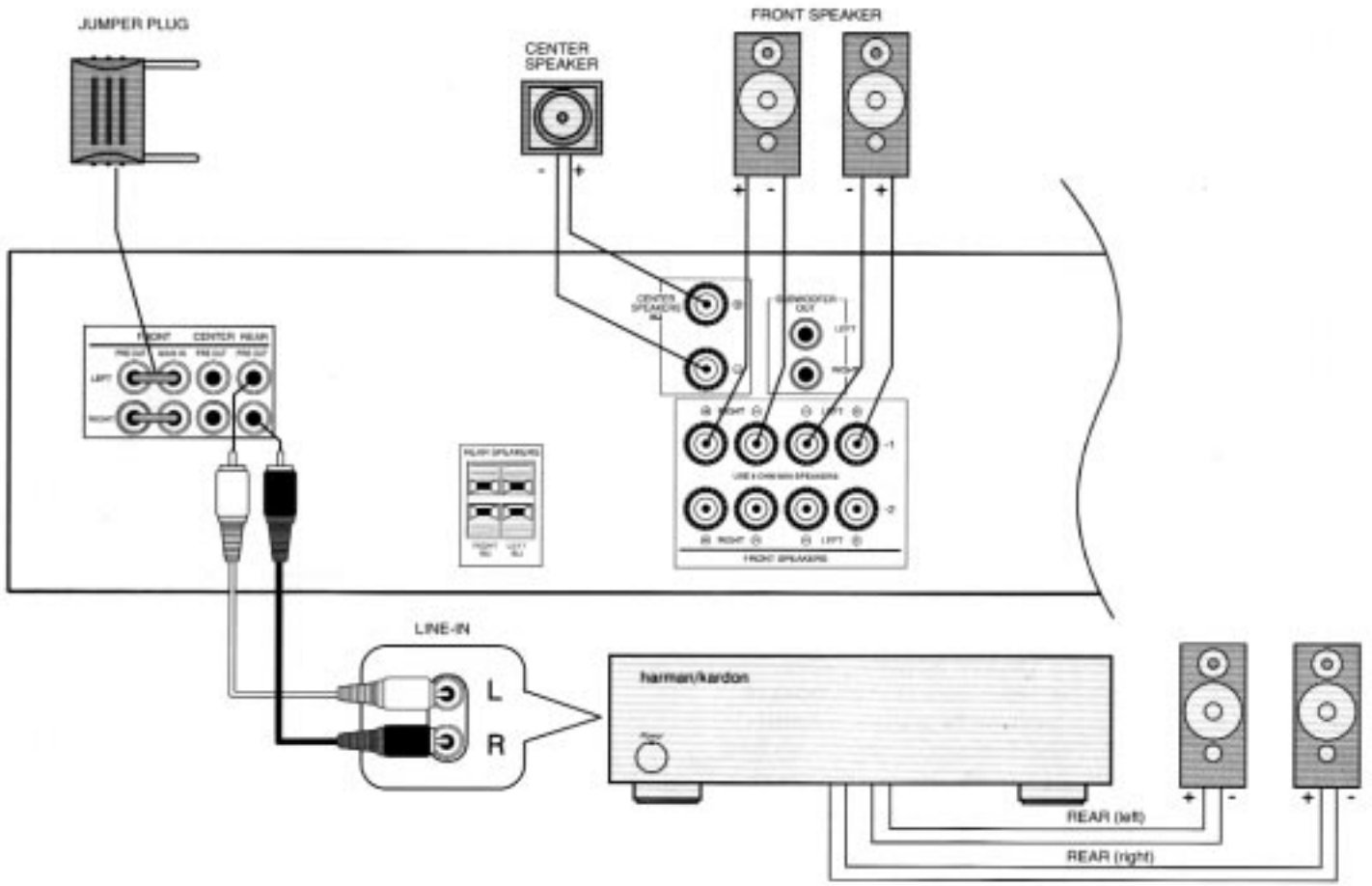


When you drive the front speakers with another amplifier

(Remove PRE-OUT/MAIN IN jumpers when the front speakers are connected to external amplifier.)



When you drive the rear speakers with another amplifier.



Surround Sound Effects

Surround Sound

The AVR20 II is equipped with 3 types of surround processors (DOLBY PRO-LOGIC, DOLBY 3 STEREO and HALL) which provide a sense of presence and expansion and let you enjoy surround-sound in your home.

Every day, we are exposed to sounds coming from our surroundings. Some sounds reach our ears directly from the source, some indirectly reflected by walls or ceilings. Sounds of voices reach us from behind, sounds of cars reach us from the side. Sounds coming from all around us are called "surround-sounds".

In order to recreate with as much precision as possible that special sound in movie theaters, speakers are placed both in front of and behind the listeners. One reason that sound from the television in our homes is so different from sound in movie theaters is because usually sound from a television only comes from in front of the viewer. With a surround system, the sounds of applause and cheers from the stands during a baseball game on TV come from in front and in back, from the left and right.

The sound from a TV equipped with a single speaker (or 2 speakers with stereo televisions) sounds very different from the actual, "live" sound.

Surround Processors

- HALL

Hall mode works best for recorded concerts and other music programs. In this mode, the front speakers provide a normal stereo effect while the rear speakers provide a reverberated sound. This reverberation helps simulate the sound you might hear at a live concert.

- DOLBY 3 STEREO

Combining the front and rear signals so that you can enjoy a regenerated sound field which has comparatively more presence and a more expansive feeling from the front 3 channels (front L, front R, center speakers) than that of ordinary stereo regeneration.

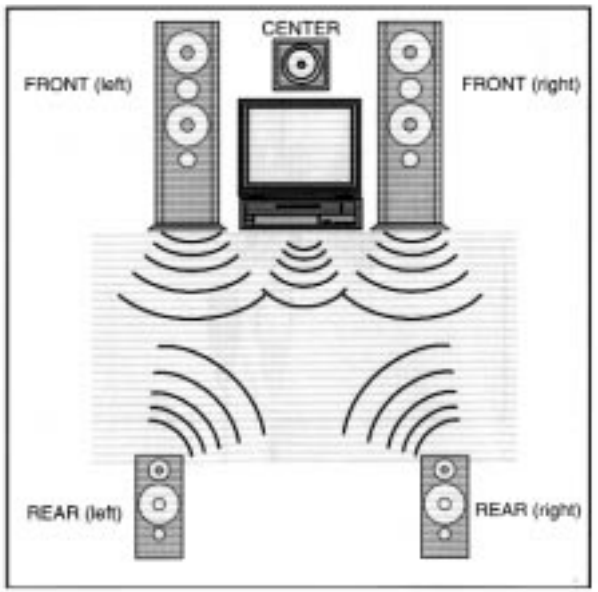
- DOLBY PRO-LOGIC SURROUND

A great number of movies made in recent times have the sound track specially encoded with the Dolby Surround mode (carrying the (dolby stereo) or (dolby surround) trademark*). The front speakers provide the dialogue and the normal stereo effect, while the rear speakers reproduce the surround signals. This position provides excellent results when watching television programs, video software, video discs or video tapes of stereo television broadcasts encoded with Dolby Surround. Dolby Stereo films have dramatically changed the role of the movie-goer from that of observer to that of participant. Clearer dialogue, richer music, enveloping ambience, on-screen, and making high-fidelity multi-dimensional sound are essential parts of cinematic presentations. Imagine recreating the same sort of audio-visual experience right in your own home.

*"DOLBY", "PRO LOGIC" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation. Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under Canadian patent number 1,037,877.

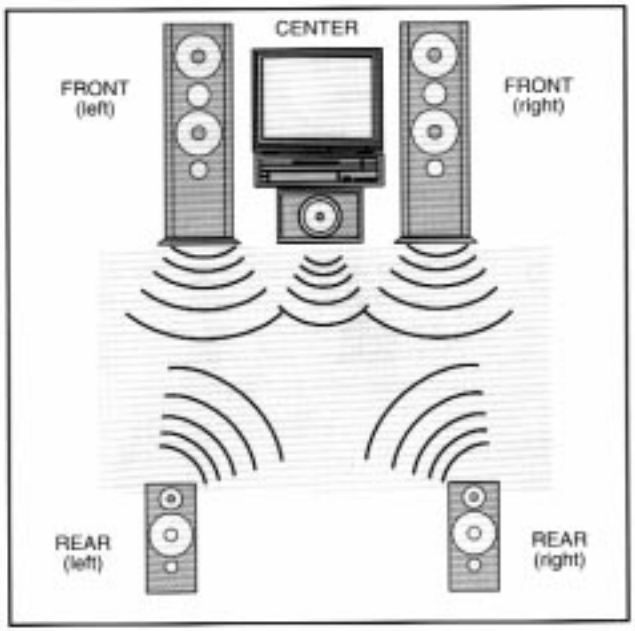
Speaker Installation

The AVR20 II incorporates a decoder which reproduces the specially encoded surround sound of Dolby surround video programs. In Dolby surround mode, select the speaker operation mode according to your speaker system.

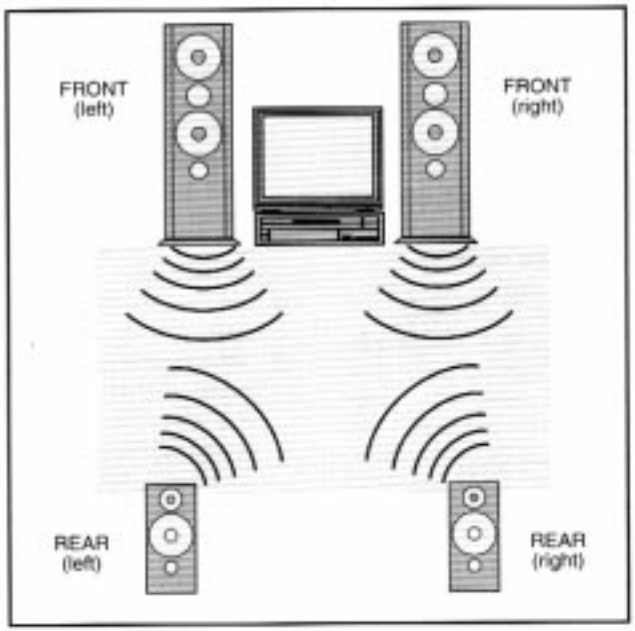


NORMAL mode

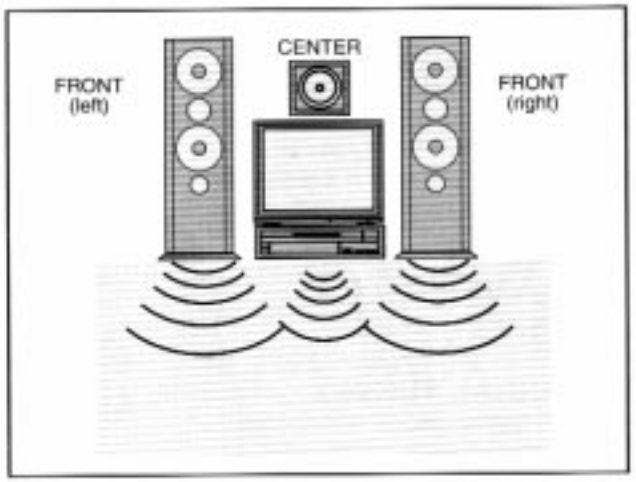
Select this mode if you use a small center speaker. The bass sound of the center channel is output from the front speakers, as a small speaker can't produce enough bass.



WIDE mode
Select this mode if you use a medium to big center speaker



PHANTOM mode
Select this mode when you play back a Dolby surround program source without using a center speaker. The sound of the center channel is output from the front (L and R) speakers



3 STEREO mode
Select this mode when you play back a Dolby surround program source only with the front and center speakers. The sound of the rear channel is output from the front (L and R) speakers.

Operation

TUNER SECTION

- Press the FM/AM SELECTOR on the front panel.

- Three different ways can be selected for tuning.

A. SEARCH TUNING

If signals are strong and there is no interference, quick auto search tuning is possible.

1. Press the SEARCH selector so that the indicator, 'SEARCH' lights up.
2. Press the TUNING button (DOWN or UP) to tune. Tuning will start automatically and stop at a broadcast station frequency with sufficient signal strength.
3. If the station where tuning stops is not the one you want, press the TUNING button once again.

B. MANUAL TUNING

Auto tuning may be impossible if the station signal is weak. If so, use manual searching.

1. Press the SEARCH selector so that the indicator 'SEARCH' goes off.
2. Press the TUNING button (DOWN or UP) to tune. The frequency will change rapidly if the TUNING button is kept pressed. Release it slightly before reaching the desired frequency, and press it intermittently until the desired frequency is reached.

C. PRESET TUNING STATIONS

PRESET buttons can be used to select any desired station which has been preset. To pre-set a station in memory:

1. Tune to the station to be memorized.
2. Press the MEMORY button and press the desired preset station button while the memory indicator blinks (it will blink for about 4 seconds). To recall the preset station, press the desired STATION PRESET buttons. If pressing only one number. There will be a 4 second delay until the preset is recalled

AMPLIFIER SECTION

1. Set the VOLUME CONTROL to the extreme counterclockwise position.
2. Turn the power on.
3. Select the desired input function.
4. Play the input source.
5. Turn the VOLUME clockwise until you reach the desired sound level.

TAPE RECORDING

1. Insert a blank tape in a cassette deck (TAPE1 or TAPE2).
2. Select the desired input function.
3. Set the cassette deck to recording mode.
4. Play the input source. Recording will start.

TAPE DUBBING

1. Insert a blank tape in cassette deck 2 TAPE2).
2. Insert a recorded tape in cassette deck 1 (TAPE1).
3. Select the input function of TAPE2 MON to monitor the sound (see #10 on page 8).
4. Set cassette deck 2 to recording mode.
5. Set cassette deck 1 to playback mode. Dubbing will start. NOTE: If you press the TEST TONE button during TAPE RECORDING or TAPE DUBBING, the audio signal is not recorded.

PROTECTION CIRCUITS

This receiver has special protection circuits.

- The thermal overload protection circuit automatically turns off the power if it begins to overheat.
- The overdrive protection circuit automatically turns off the power if it is about to deliver too much power.
- The short protection circuit automatically turns off the power if the speaker terminals are shorted.

If the receiver shuts off, check to be sure that the ventilation holes on the top of the receiver are clear of obstructions, and check the speaker connections and impedance.

AVR20 II System Remote Control

1. INFRARED TRANSMITTER WINDOW
The infrared beam is emitted forward from this window when you press any button on the commander. For the remote controls to function properly, always face this window toward the remote sensor window on the receiver and do not obstruct this window with any material.

2. POWER BUTTON
Press this button to turn the power on and off. - Automatic power on: When you press the input function buttons (CD, TUNER, TAPE 1, TAPE 2, TV/AUX, VCR 1, VCR 2, PHONO) in STANDBY mode, the power is automatically turned on and the function is selected.

3. TUNING UP/DOWN
Press these buttons to tune the receiver up or down.

4. PRESET SCAN BUTTON
Button for scanning preset station frequencies (see page 15).

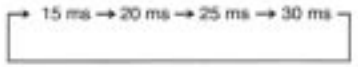
5. NUMERIC BUTTONS
These buttons can be used for preset tuning in TUNER mode. Preset tuning: Press the TUNER button to change the input function of the receiver to TUNER and then select one of 30 preset locations.

6. CD FUNCTION BUTTONS
For a CD PLAYER: DISC (DISC SELECTOR, this is available for the Harman Kardon FL8400 CD changer), (play), (pause), (stop), (backward search), (forward search), (backward skip), (forward skip), A-B and INTRO buttons are available. - When selecting a disc, press the DISC button. A-B button is used to repeat a specific passage.

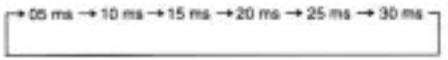
7. CASSETTE DECK FUNCTION
BUTTONS - For a cassette deck: (pause), (stop), (record), (reverse play), (forward play), (rewind), (fast forward) buttons are available.

8 DELAY TIME BUTTON
This button operates only in DOLBY PRO-LOGIC and HALL mode. In these modes, the output signal from the surround speakers is delayed slightly from that of the front speakers. Select appropriate delay time to achieve the best surround sound effect. For Dolby-Surround sound, we recommend a 20ms delay. The time is changed as below, when the button is pressed in succession.

DOLBY PRO-LOGIC MODE



HALLMODE



9. INPUT FUNCTION SELECTOR
Press the button to select the desired input function. The available buttons are CD, TUNER, TAPE 1, TAPE 2, TV/AUX, VCR 1, VCR 2, and PHONO.

10. CENTER LEVEL UP/DOWN BUTTONS
Use these buttons to adjust the sound level of the center speaker to that of the front speakers. These buttons work only in DOLBY PRO-LOGIC and DOLBY 3 STEREO mode. These buttons do not work in PHANTOM.

11. CENTER MODE BUTTON
Selects the center mode (see page 14).

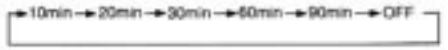
12. TEST TONE BUTTON
Generates test sounds in all channels (Left, Center, Right and Surround) in succession.

13. REAR LEVEL UP/DOWN BUTTONS
These buttons operate only in DOLBY PRO-LOGIC and HALL mode. Use these buttons to adjust the sound level of the surround speakers. Set the MASTER VOLUME control at the desired level and press the up or down button until you get the optimum surround effect at your listening position.

14. MASTER VOLUME BUTTONS
Adjust the overall (front, center, and rear) volume level.

15. DISPLAY BUTTON
Press once and the display dims, press again and it turns off. Press a third time and it goes on.

16. SLEEP BUTTON
Sets the receiver to automatically turn off after 10, 20, 30, 60, or 90 minutes. Each time the button is pressed, the setting is advanced as below.



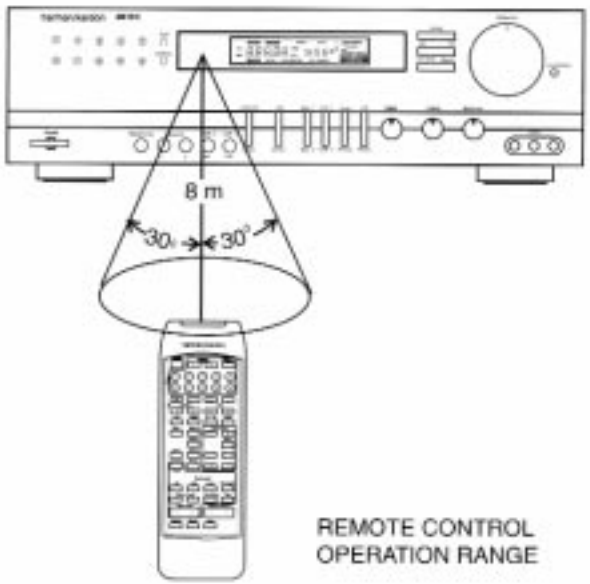
The display will dim when the sleep function has been set

17. MUTE BUTTON

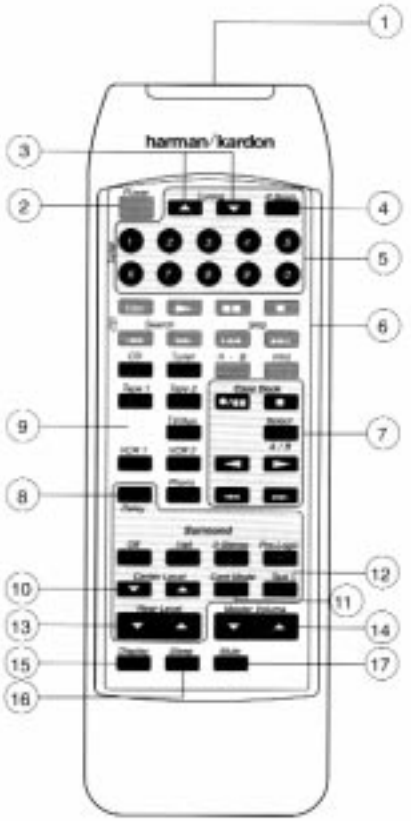
Press this button to silence the speakers temporarily. The volume indicator blinks. Press again to restore the same listening level as before.

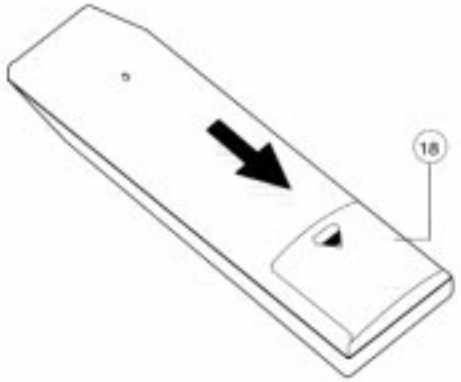
18. BATTERY COMPARTMENT

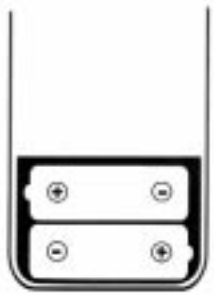
This battery case is provided as the power source for the commander. To remove the cover, press it down with your thumb and pull it toward the back side. Two UM-3, size "AA" or R6 1.5V dry batteries are used. When loading the batteries, make sure that the polarity is correct. Remove the batteries from the case if the remote commander will not be used for a long time.



REMOTE CONTROL
OPERATION RANGE







Troubleshooting

This unit is designed for trouble-free operation: most problems users encounter are due to operating errors. So if you have a problem, first check this list for a possible solution. If the problem persists, consult your authorized Harman Kardon service center.

If the problem is...	Make sure that the:
No lights illuminate when Power switch is pressed.	• Unit is plugged into a live outlet.
No sound is heard	• Speaker selector is set to the desired speakers • Correct source button has been pressed. • Volume is turned up. • Speakers are connected properly.
Dolby Surround does not work on center and rear channels.	• Correct surround mode is selected. • Rear and Center levels are turned up.
Selecting video component produces sound but no picture.	• Video cables are connected properly.
The TV picture does not match the sound.	• Video sources are properly connected to receiver. • Video/Antenna Switch on TV is set to Video.
No output from one or more channels.	• Cables are not defective: check/replace speaker or phono cables. • The signal source is operating and providing proper signal output to the AVR20 II.
No center channel output.	• Dolby surround or movie mode is turned on. • "Phantom" mode is not active.
Tuner sound has a large amount of interference. OR, The "Stereo" display is not fully illuminated. OR, Tuner sound distorts and/or volume level is too low.	• The antenna is properly connected. • The antenna is properly located. • The antenna is set in the proper direction. • The antenna is adequate to receive the desired station.
Tuner is intermittent or continuously buzzing or hissing.	• The unit is away from fluorescent lights, TVs, motors and other electrical appliances.
Stations cannot be preset.	• After pressing the Memory button, the Preset button is pressed while the "Memory" light is still flashing.
Phono sound is too faint, has hum, ringing, or "howl".	• Turntable cartridge is moving magnet type, or step-up transformer is used. • Ground wire from turntable has been connected to ground terminal on receiver. • Cable from turntable is away from power cords and speaker cables. • Turntable is away from speakers. • Turntable is on a stable surface.

Specifications

Stereo Mode

Continuous Average Power (FTC)
60 Watts from 20Hz-20kHz: @<0.09% THD,, both channels driven into 8 Ohms

Five Channel Surround Mode

Continuous average power per channel (FTC)

Front L&R channels
50 Watts from 20Hz-20kHz: @<0.3% THD, both channels driven into 8 Ohms

Center channel
50 Watts at 1kHz: @<0.3% THD, driven into 8 Ohms

Rear channels
20 Watts at 1kHz: @<1.0% THD, both channels driven into 4 Ohms

Amplifier Section

High-Instantaneous Current Capability (HCC):	±30 Amps
Negative Feedback:	26dB
Frequency Response @1W (+0/-3dB):	0.5Hz - 150kHz
Slew Rate:	80 Volts/µSec
Rise Time:	1.8µSec
Transient Intermodulation Distortion (TIM):	Unmeasurable

Preamplifier Section

Signal-to-Noise Ratio (ref. 1 Volt, A-Wtd)

Phono (MM):	74dB
CD:	92dB
Video:	84dB

Input Sensitivity/Impedance

Phono (MM):	2.5mV/47kΩ, 125pF
Video, CD, Tape:	150mV/22kΩ
Phono Overload:	140mV
RIAA EQ Accuracy (20Hz-20kHz):	±1.0dB

Tone Control Range

Bass @ 100Hz:	±10dB
Trable @ 10kHz:	±10dB
Loudness Counter @ -40dB, 100 Hz/10kHz:	+7dB/+3dB

Tuner Section: FM

Usable Sensitivity, Mono (dBf):	11.2
50dB Quieting Sensitivity, Stereo (dBf):	37.2
Signal-to-Noise Ratio @ 65dBf, mono/stereo:	74dB/70dB
Capture Ratio:	2.0dB
Selectivity, Adjacent/Alternate Channel:	5dB/65dB
IF Rejection:	100dB
AM Rejection @45dBf:	55dB
Stereo Separation @ 1kHz, 65dBf:	45dB
THD @ 1kHz, 65dBf, mono/stereo (%):	.2/.3

Tuner Section: AM

Sensitivity, External Antenna:	25µV
Alternate Channel Selectivity:	55dB
Image Rejection:	35dB
iF Rejection:	60dB

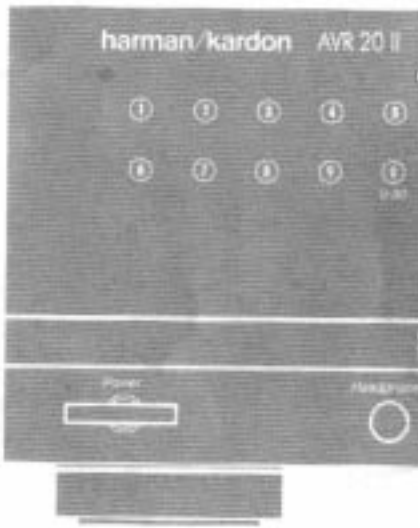
Dimensions (WxHxD):

inches:	17 5/16 X 4 3/8 X 14 15/16
mm:	440 x 125 x 380
Weight (lbs/kgs):	23.59/10.7

Depth measurement includes knobs, buttons and antennas.

Height measurement includes feet.

All features and specifications are subject to change without notice.



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